GRINDING (ABRASIVE WHEEL MACHINERY)

HAZARDS & RULES

Base Materials - Hazards and Impacts

Grinding is performed by using an abrasive wheel, made up of individual particles that are bonded together to form a wheel. The hazard with abrasive wheels is that, if not properly mounted and used, the wheel can explode, sending sections of the wheel flying out at high speeds. The pieces of the wheel can strike the machine operator, causing death or serious injury.

Another hazard associated with abrasive wheel machinery is the rotating motion of the spindle end, nut, and flange projections. To avoid injury as a result of contact with these mechanical parts, the side of the wheel must be covered to enclose these parts (some exceptions are allowed and are listed in the "You Must" section that follows.)

Regulatory Overview

OSHA

To protect the machine operator as well as other employees, who are in the area, machine safeguarding is required. A good rule to remember is: Any machine part, function, or process, which may cause injury, must be safeguarded. Machine safeguarding may be done by using controls or by eliminating the hazard (i.e., the use of the equipment.)

Three basic areas of machines require safeguarding:

1) *The point of operation:* the point where work is performed on the material, such as grinding, gutting, or boring.
2) *Power transmission apparatus:* all components of the mechanical system, which transmit energy to the part of the machine, performing the work. These components include flywheels, pulleys, belts, connecting rods, couplings, cams, spindles, chains, cranks, and gears.
3) *Other moving parts:* all parts of the machine which move while the machine is working. These can include reciprocating, rotating, and transverse moving parts, as well as feed mechanisms and auxiliary parts of the machine.

MANAGEMENT RESPONSIBILITIES

Listed below are the practices that you must follow in order to limit potential hazards associated with the use of grinding wheels. Also listed are suggested practices that you should follow in order to provide additional measures of safety.

You Must:

- use goggles or a face shield when using a grinder.
- ensure that your grinder is grounded and has its own on/off switches.
- ensure that abrasive wheels are only used on machines that have safety guards, with the following exceptions:
  - wheels used for internal work while within the work being ground;
  - mounted wheels, used in portable operations, 2 inches and smaller in diameter; and
  - type 16, 17, 18, 18R, and 19 cones, plugs, and threaded hole pot balls where the work offers protection from the debris of the spinning part in the event that this part should break. (If you are unsure as to which type of equipment you have, check the information on the equipment or the purchase records.)
- ensure that abrasive wheel safety guards cover the spindle end, nut, and flange projections (i.e., ensure that the machine has side guards), except when:
  - the object being ground provides a suitable measure of protection to the operator in the event that the wheel should break;
  - the work entirely covers the side of the wheel; and
  - machines are designed as portable saws.

- for offhand grinding machines (i.e., machines that require that the operator stand directly in front of them), adjustable work rests made of rigid construction must be used to support the work. The work rests must be kept adjusted closely to the wheel with a maximum opening of 1/8 inch to prevent the work from being jammed between the wheel and the rest, which could cause the wheel to break. Because your grinding wheel will likely decrease in size each time that you use it, it may be necessary to adjust the work rest **after** each use to ensure that the distance does not exceed 1/8 inch.